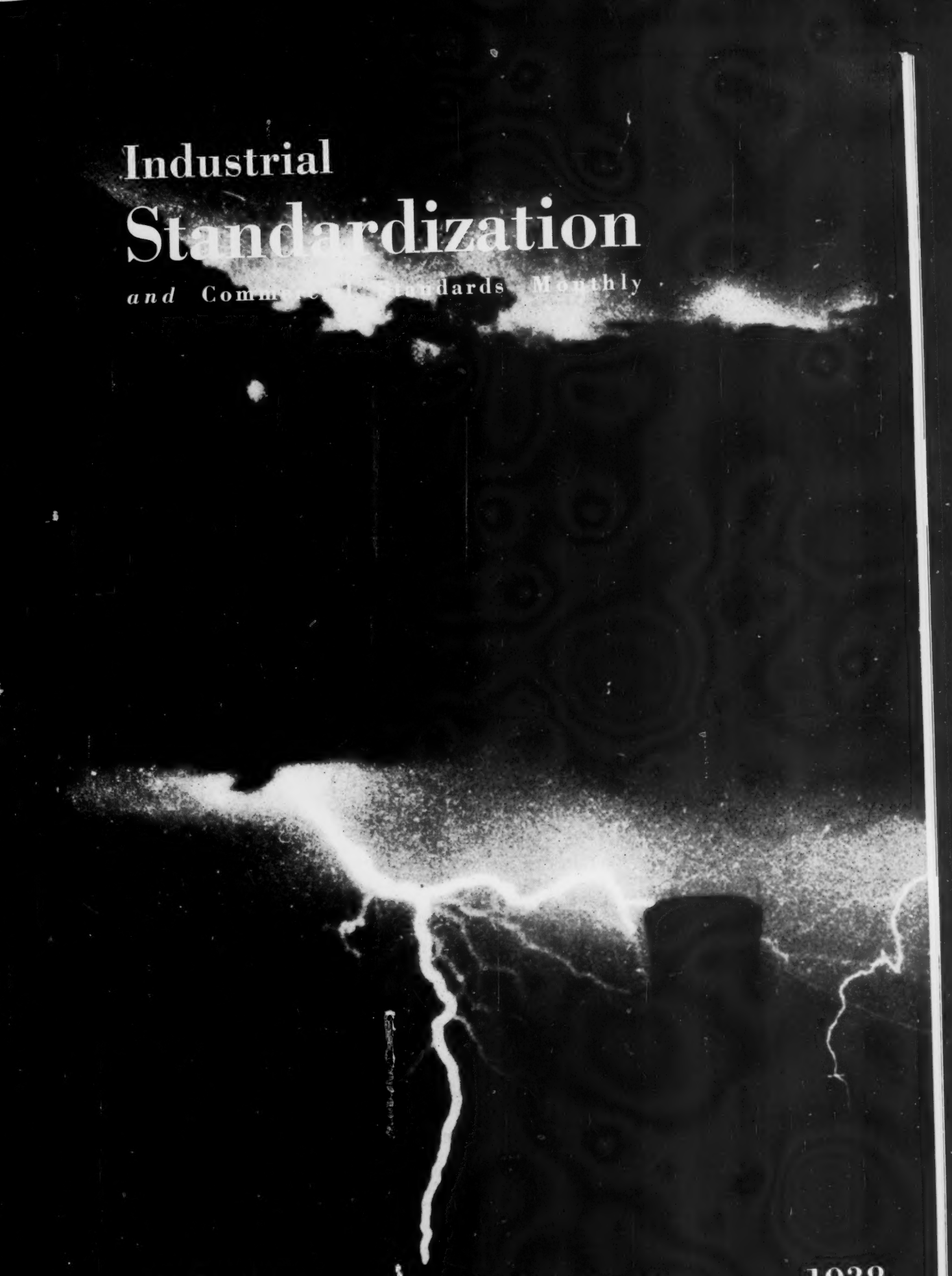
Industrial Standardization

and Commercial Standards Monthly



February 1938

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How National Standards Are Developed

THE major job of the American Standards Association is to provide the means for arriving at national industrial standards. It coordinates and unifies the standardization activities of many groups, doing work which these groups either could not do or could not do as effectively as through a national agency.

Setting up a factory specification is a far different problem from development of a national standard. Nuts and bolts, for instance, are manufactured by a variety of firms for many purposes. They are used by boiler makers. They are also used by the railroads, by makers of farm equipment, by machine tool builders, and automobile manufacturers. They fasten together battle ships, airplanes, and baby carriages. Each of these groups has its special needs and requirements, and all must be taken into consideration if a truly effective national standard is to be the result.

Twenty years of experience in dealing with intergroup problems has gone into the development of ASA methods of procedure, which are based on the fundamental principle that all groups affected by a standard have an inherent right to representation. Standards and revisions of standards may come before the Association for approval by any of a number of methods that clearly provide compliance with these requirements. The bulk of the work, however, is handled through technical committees on which sit representatives of all groups affected by a given standardization project.

These technical committees are like miniature legislatures set up along industrial lines. As in the case of the nut and bolt project, they may consist of as many as 50 men representing 20 national organizations. They may work for one year or three years collecting data, thrashing out group differences, testing for results, and coming to definite conclusions. Then and only then does the proposed standard come before the ASA for approval; and this approval is only given when there is a definite consensus, affirmatively expressed, of the groups affected by the standard.

Even after the standard has been approved and printed the technical committee in charge of its development continues to function, preparing to revise it as soon as the standard shall have lost its cutting edge as a tool of progress. For instance the National Electrical Code is rewritten every two years, enabling the many communities that use it as a basis for their wiring regulations to derive the greatest economy and protection from new materials and processes.

Three hundred and ninety-five standards and safety codes have been developed by industry through the American Standards Association. Because of the methods by which these standards were developed they are proving a positive, dynamic force in business today.

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RUTH E. MASON, *Editor*

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ASA

Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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American Standard Tells How To Protect Against Lightning

by

M. G. Lloyd[1]

Chairman, Sectional Committee on Code for Protection Against Lightning

THE protection of persons and property against lightning is a subject of widespread interest and of considerable importance. Since the time of Benjamin Franklin the value of lightning rods in the protection of buildings has been recognized. Early in the art of utilization of electric energy, the use of lightning arresters in connection with exposed overhead lines was introduced. In the fields of both buildings and electric equipment there has been a great variety of practice, and many installations have been

[1]National Bureau of Standards.

"Lightning has such a wide range of characteristics, it is difficult to provide any practical means which will afford protection under all conditions, although . . . the degree of protection afforded by present practice is high if the installation is properly made."—*American Standard Code for Protection Against Lightning, Parts I, II, and III.*

Courtesy General Electric Co.

A lightning storm near Pittsfield, Massachusetts, graphically illustrates the dangers to which a community may be exposed in a few minutes during a bad storm. Three different discharge centers are shown discharging at the same time in the five minutes during which this film was exposed.

made which did not adequately fulfill the purpose for which they were intended.

In order to meet the definite need for standards of practice in connection with lightning protection, the American Standards Association included in the first list of safety codes on its program a code of practice on this subject. The American Institute of Electrical Engineers and the National Bureau of Standards were designated as sponsors for this project, whose scope included the protection of buildings, oil tanks, and other structures; trees, livestock, and persons; overhead electric lines, and apparatus which is connected to them.

A sectional committee was organized by the sponsors in 1921, and in 1929 it completed the formulation of definite standards for the protection of persons (Part 1), buildings and other property (Part 2), and structures containing flammable liquids and gases (Part 3).[2] These were published in Miscellaneous Publication M92 of the National Bureau of Standards. In 1932 the sectional committee revised Parts 1 and 2 of the code and in 1937 it made slight revisions in all three parts. The last edition was approved by the American Standards Association, October 29, 1937, and has been issued by the National Bureau of Standards as Handbook 21.

Part 1 of the code is very brief and gives some simple instructions on what a person should do who is exposed during a thunder-storm to avoid being struck by lightning. If one cannot avoid remaining out of doors, it is well to keep away from isolated trees, from wire fences, from hilltops and wide open spaces, and from small sheds which are in an exposed location. If no building is available for shelter, a cave, a deep valley, a grove of trees or dense woods offers some protection.

Part 2 of the code gives specifications for lightning rods to protect buildings and sets forth in some detail the requirements for good design of such installations. Special sections are devoted to steeples, water towers, chimneys, hangars, buildings containing baled flammable materials,

[2]The subject matter contemplated for this code comprised also two parts dealing with electric apparatus and lines. Practice in these fields had not, however, crystallized to the point where it was felt that definite standards could be set up. The committee consequently issued only a preliminary report dealing with this part of the subject, and this was published as Miscellaneous Publication M95 of the National Bureau of Standards.

Franklin Proves Lightning Loss Can Be Controlled

Benjamin Franklin erected the first lightning rod in existence in 1753. The rod was of iron, extended 5 feet into the ground and had sharp points raised 7 to 8 feet above the roof.

After many months of patient waiting, during which he had persuaded several of his friends to use the new device, Franklin's faith in his invention was justified. During a severe storm several persons plainly saw lightning strike a rod on the house of a Mr. West, says Technologic Paper No. 56 of the National Bureau of Standards. The flash was carried off without damage to the building.

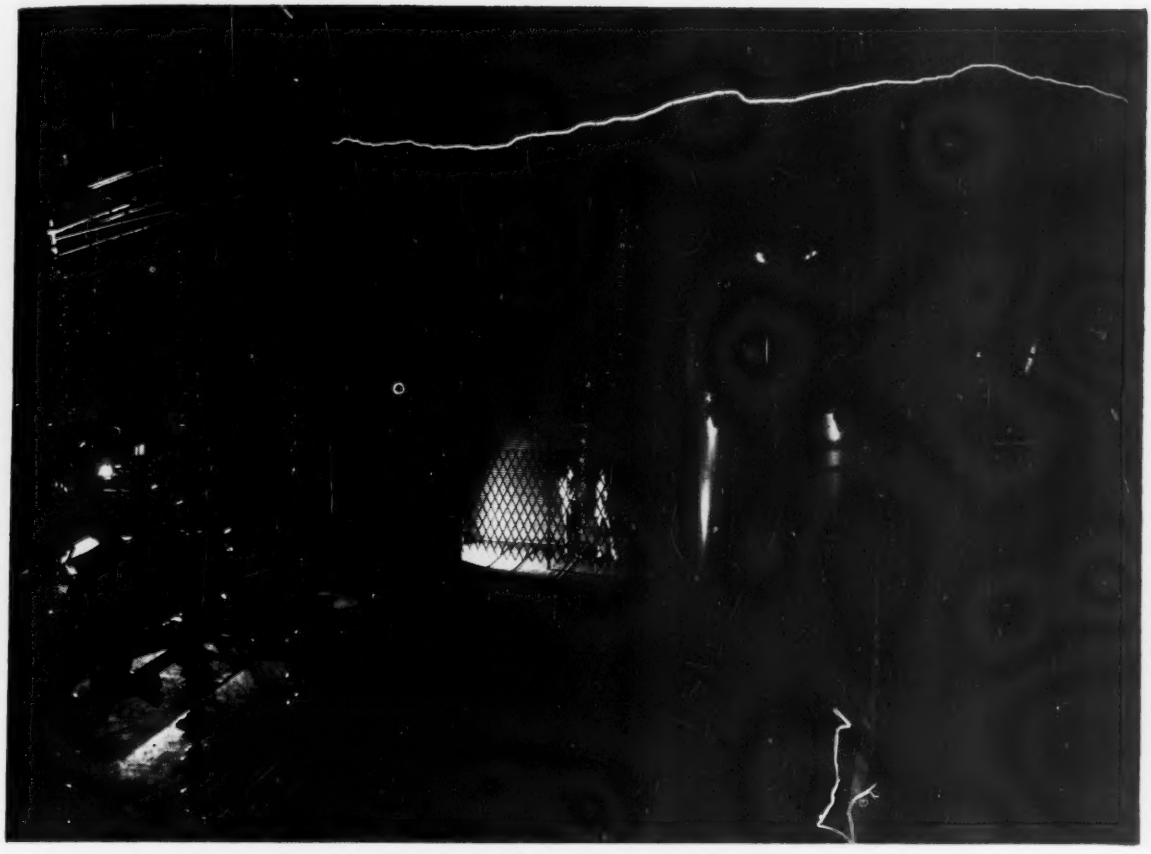
The State of Kansas is one of the few states which records the types of buildings destroyed by lightning, according to the National Fire Protection Association. The Kansas report shows that a small percentage of the lightning loss can be traced to buildings which have been protected by lightning rods. The American Standard cautions against improper installations and inadequate upkeep which may account for some of the damage to rodded buildings. Kansas reports the following loss from 1926-1930:

Unrodded Structures

No.	*Kind*	*Loss*
260	Barns and stables	$488,981
103	Dwellings	150,462
5	Churches	136,432
9	Garages	19,576
5	Elevators and granaries	24,818
6	Schools	57,221
4	Stores	53,434
4	Sheds	4,325
2	Flour mills	10,400
21	Miscellaneous	29,640
419		$975,289

Rodded Structures

No.	*Kind*	*Loss*
10	Dwellings	$25,746
8	Barns and stables	17,166
1	Schools	500
1	Miscellaneous	1,035
20		$44,447



In the General Electric laboratories, artificial lightning is produced and studied to determine how power lines and stations can best be protected. This picture shows a 10,000,000-volt artificial-lightning discharge.

ships, and trees. There is also a section on the protection of livestock in fields.

Part 3 deals with the protection of oil tanks and gives fundamental principles to be applied rather than the detailed construction which is offered in the case of buildings.

These specifications for the installation of lightning rods have been very widely used and are followed by all of the prominent manufacturers and installers of lightning rods. Compliance with them is necessary to secure the approval of Underwriters' Laboratories, Inc. The work of developing these specifications has been done in cooperation with a committee of the National Fire Protection Association, whose standard on this subject includes the same requirements.

Inquiry is frequently made as to the degree of protection which is afforded a building by the installation of lightning rods. It is admitted that this protection is not perfect unless a more complete metallic cage is constructed about a building than is required by the code. Compliance with the code does give, however, a high degree of protection, as is evidenced by the reports of many State fire marshals on fires which are caused by lightning. It is found that nearly all cases of loss are for buildings which have not been rodded, and in the few cases where buildings have been rodded there is a question whether the installation has been kept in good condition, as conductors sometimes corrode at the ground line and thus interrupt the connection to ground. The chances of injury to a building which is properly rodded are therefore very small. This does not mean that there is a reduction in the likelihood of a building being struck by lightning, but that when it is struck the discharge is carried harmlessly to ground. The losses by fire initiated by a stroke of lightning have been greatly reduced by the installation of lightning rods, and these are especially recommended for isolated farm buildings where the likelihood of damage is much greater than for an urban building.

Number of Fires and Fire Losses Due to Lightning in the United States in 1936, Estimated by the National Fire Protection Association

(Based on fire marshal reports from four states)

	Number of Fires		*Fire Losses*	
	Rodded Bldgs	*Unrodded*	*Rodded Bldgs*	*Unrodded*
Illinois	40	375	$49,362	$629,424
Iowa	36	110	66,723	172,141
Ohio	11	415	38,512	415,384
Wisconsin	120	1,533	58,032	287,493
Total	207	2,433	$212,629	$1,504,442
Estimated U. S. Total[1]	2,600	30,000	$1,600,000	$11,700,000

[1]These figures are obtained by applying the totals for the four states to the whole country at the 1930 population ratio. To cover unreported fires, 100% has been added to the number of fires, and 25% to the losses.

In spite of the value of lightning rods in the protection of buildings their use has at times and in places come into disrepute owing to a general lack of information as to the best methods of protection, and it is hoped that the publication of definite standards on this subject will enable the public to demand installations which will give them adequate protection against lightning.

Further experience and the accumulating knowledge of the properties of lightning may lead later to changes in these specifications, and future revisions are contemplated from time to time as experience and progress in the art may warrant. Comments regarding these specifications and recommended changes are invited by the committee from all who have experience with them.

John A. Capp

John A. Capp, who took an active part in 1918 in organizing the American Engineering Standards Committee, predecessor to the present American Standards Association, and who has been a member of the ASA Standards Council throughout its history, died January 6 after a short illness. Mr. Capp was engineer of materials in the General Electric Company's laboratory at Schenectady, and had been identified with that company for more than 45 years.

Mr. Capp was a pupil of the late Professor Elihu Thomson, and was later associated with him in the Thomson-Houston Company, predecessor of the General Electric Company at Lynn, Mass. After a short time at Lynn he was sent to Schenectady where he formed the testing laboratory and was its head until it was merged with the works laboratory in 1927.

He was a charter member of the American Society for Testing Materials, and was president of that organization in 1918 and 1919. It was as head of the A. S. T. M., one of the founder societies of the American Standards Association (then the American Engineering Standards Association) that he first became interested in the ASA. Mr. Capp has been a member of the Standards Council, general committee responsible for standardization projects under the procedure of the ASA, since 1918. He was chairman of five ASA technical committees, working on development of standards.

He was also a member of the American Foundrymen's Association and the American Society for Metals.

Advances in Technique Change Australia's Welding Code

Recent advances in technique and practice of welding have been taken into consideration in the new draft of the Australian Standard Code for Metallic Arc Welding in Steel Construction.

The draft is a revision of the Australian code of 1933 and includes new provision for tests and added requirements for No. 2 and No. 0 gauge and 5/16 and 3/8 inch diameter electrodes.

The Australian Standard Specification for Electrodes for Metallic Arc Welding, previously bound with this code, has also been revised and is being issued in a separate publication.

Copies may be borrowed from the American Standards Association.

Standards Save Thousands For Los Angeles County

Purchasing Department credits centralized buying, use of standards and specifications, with large savings

SAVINGS amounting to thousands of dollars are traced to the use of standards in the County of Los Angeles' centralized system of purchasing, according to a report just issued by the Purchasing and Stores Department of the Los Angeles County Bureau of Efficiency.

"When first organized, the Stationery Store carried more than 1,600 regular stock items in addition to several hundred items purchased on request, but not carried in stock," the Department reports. "At the end of a year, through standardization, this total was reduced to 551 standard items. At the present time the total number of items of all classes issued through the Stationery Store is 1,415. However, this includes 35 items which are drawn from the General Store and issued in small lots for convenience. Also, 135 items are in class 73 which are bindery items. At the time standardization was effected on these items there was no bindery operation.

"Specific illustrations of the move toward standardization are interesting. Carbon paper was reduced from 100 different kinds to seven, made up of 32 items, and is now purchased on a yearly contract basis at a price very much below those prices formerly paid. This has resulted in a definite saving of approximately $3,500.00 annually.

"Instead of purchasing every brand of pencil manufactured, standardization has reduced the total to 12 types or grades composing 27 items. The increase in volume buying of pencils has resulted in a reduction of 39 per cent in costs and an annual saving of more than $3,400.00.

Fewer Kinds of Wastebaskets

"Twenty different kinds and sizes of waste baskets have been reduced to three. The number of different kinds of pens has been reduced from 114 to 22. However, a new type of lettering pen has been adopted which has 27 items. Manila paper has been reduced to one kind; bond paper has been reduced to three grades.

"Standardization of rubber stamps has resulted in a contract on a 24-hour delivery basis and an annual saving of over $2,000.00.

"Formerly each institution used a different kind of china-ware which was necessarily purchased in small quantities. Today, under standardization, all are using the same grade of ware of three distinguishing designs which is being secured in carload shipments at a saving of 30 per cent on a consumption of 10,000 dozen annually."

Recommends Permanent Committee

The report recommends appointment of a permanent committee to work with the Purchasing Agent in connection with standardization. "Los Angeles County," it comments, "has become a heavy buyer of a large variety of commodities and as a buyer is definitely concerned in specifications and standardization of such articles.

"In the standardization process," it explains, "specifications become written descriptions of the types, designs, materials, or practices which are agreed upon as standards. A specification is not limited to a description of standards as it is an integral part of every purchase order or contract, describing what is to be furnished by the seller in the way of composition, construction, utility, durability, efficiency, texture, shape, form, or dimension. Specification is an essential of standardization and the medium for expressing the commodity standard so that it may be clearly understood by the buyer, seller, inspector, and the user.

"An adequate specification conforms to the following fundamentals:

(1). **It must be specific and complete, leaving no loopholes whereby an unscrupulous bidder**

may evade any of the provisions to take advantage of the buyer or to permit of unfair competition.

(2). It must accurately describe the article specified and the physical performance requirement that is to be met.

(3). It must describe the methods of inspecting and testing which will govern the acceptance or rejection of the goods.

(4). It must be worded as simply as is consistent with clear meaning; consequently, it may be easily read and understood.

(5). It must stipulate any special methods of packing or marking which may be required.

(6). It must conform as closely as possible to naturally recognized standard specifications.

"The Department has worked out and established some 200 separate specifications for commodities in use by the operating departments of the County. Some of these have been the result of considerable research and laboratory tests.

"It may be set down as a fundamental that without accurate and adequate specifications, scientific purchasing cannot be obtained. Specifications should be carefully compiled to cover all the essentials described in the definition given above, and a file of such specifications should be maintained as a part of the equipment of purchasing."

Consumers' Project Analyzes Standards for Fresh Fruits And Vegetables

Twenty-five charts analyzing United States and state standards for 117 types of fresh fruits, vegetables, and nuts, and 10 types of dairy products have just been completed by the Consumers' Project, U. S. Department of Labor. The analysis shows what defects must not appear in each grade and shows the different grade requirements for maturity and development, color, and size, and the tolerances permitted.

The survey disclosed that there are United States standards for 84 types of fresh fruits, vegetables, and nuts. The standards referred to as "United States" were formulated by the Bureau of Agricultural Economics, U. S. Department of Agriculture, and are used by the Bureau as the basis for its grading and inspection work. The standards are used chiefly in the wholesale markets at present, but the Foreword to the survey comments that "many are applicable to retail markets and consumer use. Fresh fruits and vegetables, sold under official grades, sometimes carry the grade marking on the wholesale container. For example, burlap potato bags, apple boxes and barrels, and strawberry crates can be found in retail stores with the marking on the container. Some of the retail packages for apples, potatoes and colored open-mesh bags of oranges can be found with the grade marking on the package."

Other standards issued by the Federal Government and included in this survey are Federal Specifications prepared for use in Government purchasing.

The states which use all of the grades of a United States standard for a product are listed on each chart. When a standard established by a state differs from the United States standards for the same product the state standard is also analyzed.

In the case of dairy products, the Federal standards are those issued by the Secretary of Agriculture for the guidance of officials in enforcing the Federal food and drugs act. The Federal laws and regulations for dairy products are administered by the Food and Drug Administration of the United States Department of Agriculture, and the state laws by the state dairy and food-control officials.

The charts show how the various United States grades compare with each other and with the several State grades for the same product.

Copies of the pamphlet, *Analysis of Condition, Quality, and Size Requirements of United States and State Standards for Fresh Fruits and Vegetables and Legal Standards for Dairy Products*, are available from the Superintendent of Documents, Washington, D. C., at 25 cents each.

Australia Issues Specifications for Creosote Oil for Preserving Timber

Standard specifications for creosote oil for preserving timber have just been issued by the Standards Association of Australia. It includes requirements for specific gravity, fluidity, water content, distillation, residue, tar acids, and matter insoluble in benzole. Based on the British Standard for creosote oil it includes also test methods for creosote and for testing tar and its products.

Copies may be ordered or borrowed from the American Standards Association.

New Swedish Standards For Hospital Stretchers

The Swedish standards association recently issued two standards for hospital stretchers, one covering Type A stretcher, the other Types B and C stretcher.

Copies of the standards, published in Swedish, and numbered Type A SSK-27 and Type B and C SSK-28, may be borrowed or ordered from the American Standards Association.

Safety on the Road to Success[1]

by

John Gaillard[2]

Mechanical Engineer, American Standards Association

THE public snickered, a few weeks ago, when the State of New Jersey started to test the automobiles of its citizens for safe operation. They had to pass a series of standard tests. Cars of several public authorities, including a high-priced 1938 model flunked, while a 1926 model-T, eleven years old and still going strong, passed with flying colors.

Keeping cars in proper shape will not eliminate accidents altogether. Chance still puts into the equation a number of unknown factors that may cause trouble. But it is logical, and from the viewpoint of public safety only just, that the factors that *can* be controlled be kept within definite limits. There is no sense in requiring a car to have brakes on all four wheels and then allowing the owner to neglect the brakes to the point where they won't work. Here is what happened in one of our cities. A man driving his car failed to stop when signalled to do so by a traffic officer, but after having passed the crossing, leisurely glided into a landing along the curb. When boarded and talked to by the cop, the driver explained that his brakes were lying on the back seat—he was just driving to a garage to have them fixed. That's why something else had to "curb" his speed.

"Roadability" National Problem

Setting up standards for the "roadability" of automobiles obviously is a *national* problem. The tests must be uniform in the different states. Else, your car may be considered safe on one side of a state line and unsafe on the other. Formerly, such a condition existed in regard to traffic signals. Red meant "Stop" in one place and "Go", in another. The American Standard Code for Traffic Signals has brought about general uniformity in this respect. You can now drive from New York to San Francisco without the risk of getting into jail half a dozen times or being smashed up for sheer absence of a common traffic language. Another project launched under the auspices of the American Standards Association aims at similar uniformity of "roadability tests" for cars and trucks—the standard tests to be set up through voluntary cooperation of car builders and users, safety experts, insurance groups, and public authorities.

Standards Improve Control

This project might be called symbolic for business management. Here, also, control of activities— including the adaptation to a change in requirements—is improved through adherence to standards. Like the actual highway, the road to technical, commercial, and financial success of an industrial concern presents enough hazards to keep executive management busy all the time. The risks can be greatly reduced by a well balanced system of standards, technical and managerial. There is no longer any mystery about the way in which this can be achieved. Just as automobiles have been made increasingly safer through better design, just so the art of standardization has developed and improved its special techniques based on definite principles which cannot be neglected without impairing the success of a business concern as ultimately measured in dividends.

To the student of management, the analogy between control in the purely physical sense (as in the case of an automobile) and in the more abstract sense (as applying to an organization) is striking. In actual practice, the realization that there is now available a definite *technique* of standardization is gaining ground slowly. Protection for an invention believed to be valuable is entrusted to an expert drafter of specifications and claims—the patent attorney. But the same company may totally neglect the opportunity of protecting its business interests by carefully designed standards—which may be worth far more than many a patent.

Yet, the idea that standardization is not a negative, restrictive, stultifying influence, but a *positive, constructive, vital* function of industrial man-

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[1]Reprinted from the *Bulletin* of the Society for the Advancement of Management, February.

[2]Vice-president in charge of Standardization, Society for the Advancement of Management.

agement, is steadily growing. This progress is due largely to a more widespread recognition of standardization as an art—the art of hand-tooling standards to the needs of the individual organization, and at the same time making them fit harmoniously into the more comprehensive structure of the trade, the national industry and, if required, the international scheme.

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13 States, 9 Cities Test Cars for Mechanical Defects

Inspection Requirements Vary

MOTOR vehicle accidents caused 34 per cent of the 111,000 accidental deaths during 1936, and in the case of 15 per cent of these accidents vehicle defects were contributing causes, the National Safety Council estimates in its *Accident Facts*, 1937.

In an effort to eliminate this 15 per cent 13 states and nine cities now require examination of motor vehicles.

Each state or locality has its own standards to which vehicles in its jurisdiction must comply. In 1935, it was reported, only 28 per cent of the vehicles examined received a certificate of good condition. Fifty-eight per cent of those which failed to qualify needed lamp replacements or adjustments, according to the local inspecting agencies, 26 per cent were in need of brake adjustments or new brake linings, 11 per cent required adjustment or repairs to the steering mechanism, and 10 per cent had one or more minor defects. Records in one state showed that 55 per cent of the cars inspected had tires ranging in condition from only fair to poor.

2,408 Cars Unfit

Portland, Oregon, which started at the beginning of 1937 to test vehicles at a municipal testing station, is said to have found 2,408 trucks and cars out of 4,365 machines examined the first week unfit to be on the highways. New Jersey last month found a high percentage in unfit condition.

Requirements for inspections vary among the thirteen states and nine cities which now require examination of motor vehicles. New Mexico requires three inspections a year; Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, Pennsylvania, and Virginia require two inspections. Colorado requires one and permits two, and Delaware, Maryland, Utah, and Vermont require only one inspection a year.

Ten of these states have authorized a limited number of private garages as inspection stations. Three—New Jersey, Connecticut, and Delaware—have inspections in state-owned and operated stations.

More than 1,000,000 vehicles, the State of New Jersey estimates, will be inspected by the state's inspection service twice a year. In New Jersey when a motor vehicle is rejected at an inspection station, seven days are allowed to have the deficiencies remedied. Before the seven days are over the car must again be presented for inspection. Adjustments or repairs may be made at any place. The Department does not indicate how or where the work should be done.

A committee under the procedure of the American Standards Association and under the administrative leadership of the National Conservation Bureau and the American Association of Motor Vehicle Commissioners is now developing standards for inspection of motor vehicles. The committee hopes that approval of such national standards for inspection will mean coordination of the various state requirements.

More than 26,000,000 motor vehicles were registered in the United States in 1935 — all other countries together had approximately 10,000,000.

Drawing Charts Show How to Use Standard

Three sheets of drawings compiled from the American Standard for Drawings and Drafting Room Practice have been arranged so as to be easily understood for class-room instruction, by the Standards Committee of the Mechanical Drawing Association of New England. The drawings show details of dimensioning, angles, circles, and arcs; line characteristics; and sections. A sheet on screw threads was prepared some time ago.

The Association is offering each of the four sheets for sale at $1.00 per hundred, 100 being the minimum order.

Copies may be ordered from Edward H. Temple, Chairman, Standards Committee, Mechanical Drawing Association of New England, Mechanic High School, Boston, Mass.

Revision Brings Commercial Standard on Stoddard Solvent Up-to-Date

Recent developments in manufacturing processes have been taken into consideration in bringing the Commercial Standard for Stoddard Solvent up-to-date, says the National Bureau of Standards in announcing the new edition. The purpose of the standard is to provide a nationally recognized specification for guidance of producers, distributors, and users of this dry cleaning fluid, and to provide a basis for certification of quality. The standard has been entirely rewritten to include the latest standard methods of test issued by the American Society for Testing Materials.

The revised standard includes a requirement for the maximum permissible residue after distillation which states that 50 per cent of the solvent must distill at temperatures not higher than 350 F, 90 per cent at temperatures not higher than 375 F, and the maximum distillation temperature shall not be above 410 F.

Other requirements cover suspended matter and undissolved water, color, corrosive properties, doctor test, absorption by sulphuric acid, flash point, and acidity. Methods of sampling and testing are described.

Recently, in addition to its use in dry cleaning, Stoddard solvent has also been used in machine shops, garages, and printing plants for the cleaning of machine parts, plates, type, etc. It is distinctly safer from a fire-hazard standpoint than motor gasoline.

The revision of the specifications was recommended to the Division of Trade Standards, National Bureau of Standards by the National Association Institute of Dyeing and Cleaning and jointly by the Standing Committee and Technical Committee D of the A.S.T.M. Committee D-2, on January 6, 1937. It is effective for new production from February 10, 1938. The revision has been accepted by the industry and has been promulgated by the U. S. Department of Commerce through the National Bureau of Standards as CS3-38.

Copies are available from the Superintendent of Documents, Government Printing Office, Washington, D. C., at five cents each.

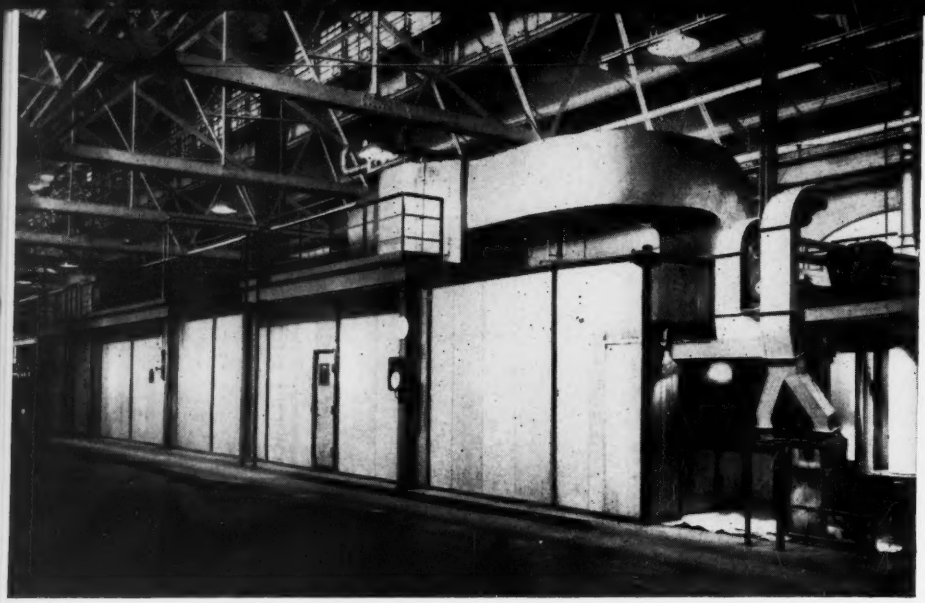
Drawing Textbooks Use American Standard

"It is encouraging to see that the newer books in the field of drafting recognize the value of uniformity of line expression with such statements as the following: 'The movement for the standardization of drawings and drafting room practice in the United States has been growing steadily for many years and has culminated in the recent adoption by the American Standards Association of the American Standard for Drawings and Drafting Room Practice (ASA Z14.1-1935). This standard is heartily endorsed by the authors, and wherever practicable exact reproductions of the illustrations and the explanatory matter relating to them are incorporated in the text.'

"The authors have not only made the above statement in their preface but have lived up to their belief by strictly conforming to it throughout their entire volume.[1]

"Standardization has saved millions of dollars per year for manufacturers and there seems to be no legitimate reason why engineering drawing cannot be standardized in a similar manner to the betterment of all concerned."—*Edward H. Temple, Chairman, Standards Committee, Mechanical Drawing Association of New England, in the "Mechanical Drawing News," January.*

[1]Technical Drawing. Geisecke, Mitchell, Spencer.



Different processes in preparing lead-covered and braid-covered power cable and varnished cloth for insulation

Left — *Machine for impregnating cloth with varnish*

Evolution of Varnished-Cambric Cable—Standard Added to Wire and Cable Series

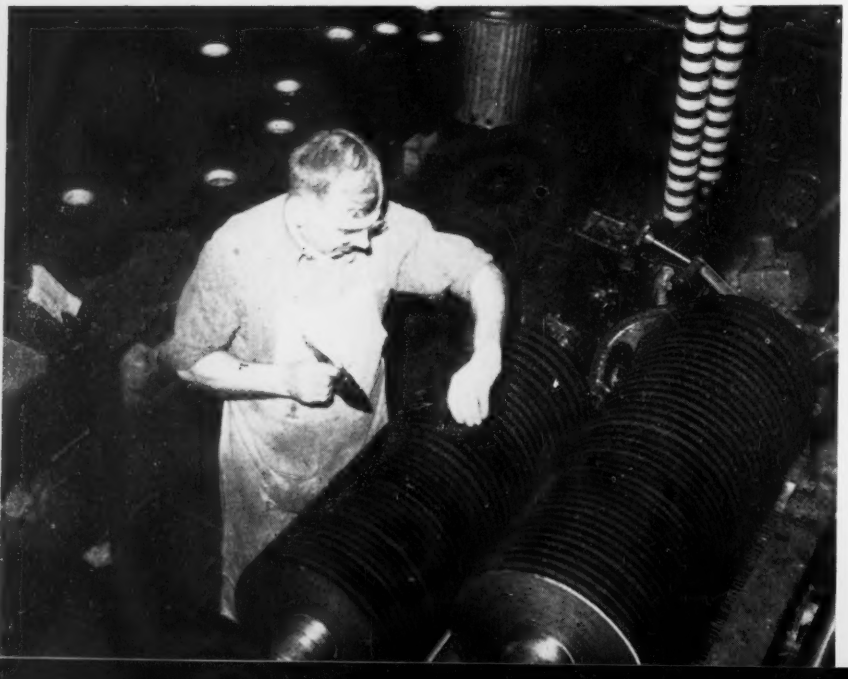
by

W. C. Hayman[1]

Member of Technical Committee No. 6 on Varnished Cloth Insulation, Sectional Committee on Insulated Wire and Cable

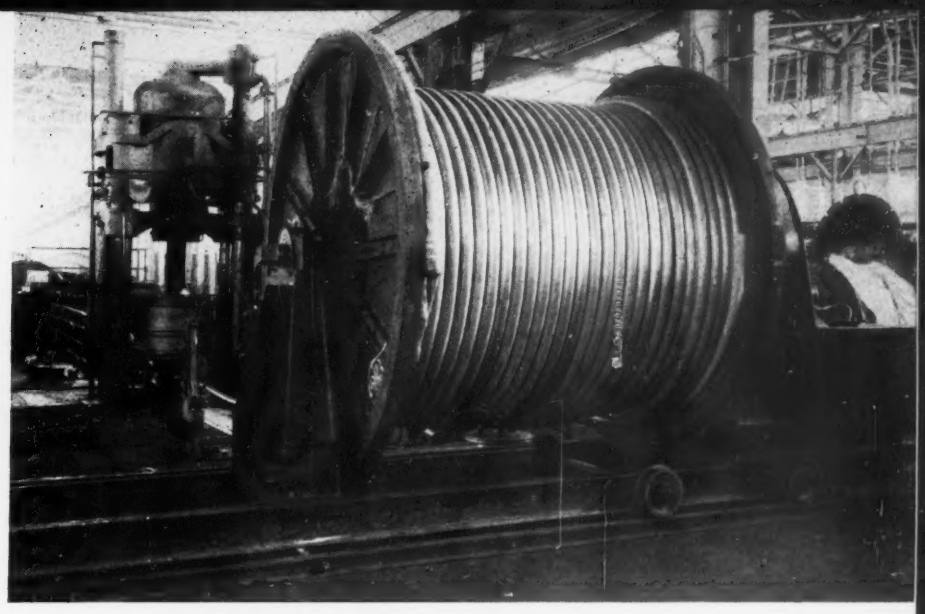
THE recent approval of specifications for varnished-cambric insulated cables by the American Standards Association officially recognizes a product of which the 1937 United States production value totalled approximately $6,000,000. In its forty years of growth, varnished-cambric insulation has become an important part of the cable business.

These specifications as approved by the ASA



Roll of varnished cloth for insulated cable being slit into tapes

[1]Cable Engineering Dept., General Electric Company, Schenectady, N. Y.



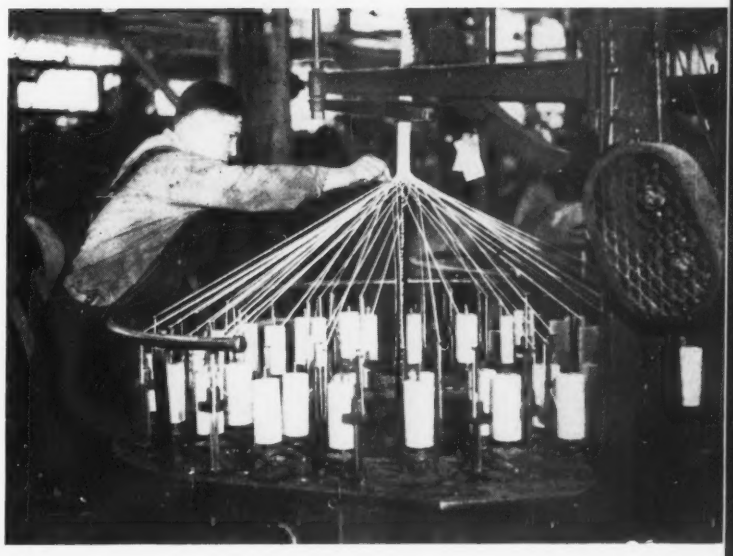
Right — *Application of lead sheath for lead-covered cable. Leaded cable being wound on reel*

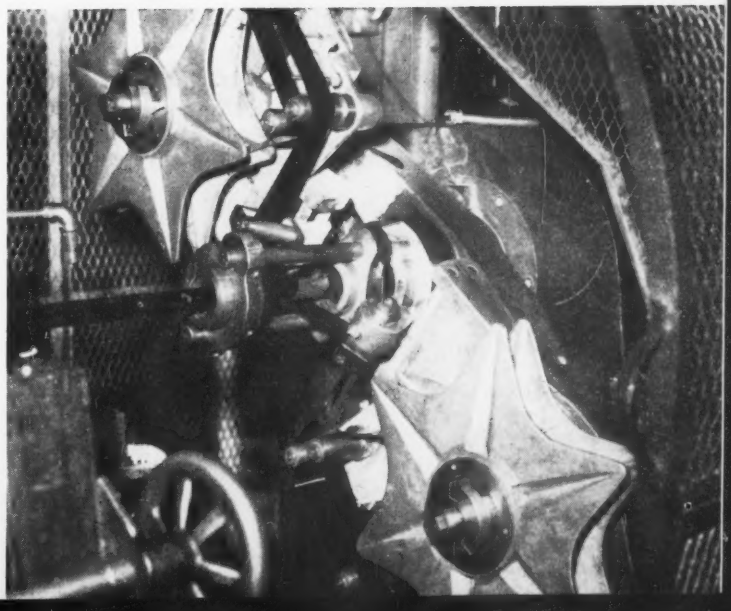
Right below — *Application of braid for braided cable*

are intended to apply to all sizes and classes of varnished-cambric insulated, lead-covered or braided cables which are to be used for the transmission and distribution of electrical energy. They may apply to underground, aerial, or indoor power cable under normal conditions of installation, and operating at voltages not above 17,000 volts between conductors for non-shielded multiple conductor cables. The specifications may further apply for single-conductor and shielded cables operating on an ungrounded neutral system not over 17,000 volts between phases, for single-conductor and shielded cables operating on a grounded neutral system not over 28,000 volts between phases, and at a conductor temperature not to exceed 75-degrees centigrade.

The history of the development of this type of cable reaches back to 1899. At that time William L. R. Emmet, of the General Electric Company, applied for a patent which constituted the ground work for later developments. This patent covered cable insulated by successive layers of tape wound around a conductor and coated with varnish. The varnish was allowed to harden and oxidize after the application of each layer. Probably—though it is not definitely known—no cable of this sort was manufactured commercially, as it would have been exceedingly stiff and hard to handle.

It was in 1901 that Emmet, this time in collaboration with Wallace S. Clark, applied for a patent covering an improvement on the original cable. This involved pre-treating the cotton tapes with varnish, then applying the tape to the conductor in layers. After each layer the cable was





Taping head for wrapping varnished-cloth tapes on cable. Tape can be seen in center of picture

run through a bath containing viscous, nonhardening insulating compound. This was the forerunner of modern varnished-cambric insulated cables; a variation of it was first manufactured commercially in 1902.

It was evident almost from the beginning that there would be wide application for the new cable. In the first place, high-voltage rubber insulation had been giving considerable trouble because of ozone cutting and difficulties encountered in keeping the conductor central within the insulation. Further, the cost of rubber suitable for high-voltage insulation was extremely variable, fluctuating between $1.00 and $3.00 per pound. Varnished-cambric insulation was less expensive.

One of the several earlier uses of the new insulation was for apparatus leads. In this application the conductor was a flexible strand, insulated with varnished-cambric and covered with a braid. Another earlier application was for bore-hole, shaft, and tunnel use in mines; later, for vertical riser cables in tall buildings.

Paper insulation had also made headway in those early days, but its progress was slowed because of the skill required in installing and jointing. At that time there were many small utilities and industrial plants not having the trained personnel to handle paper-insulated cables. In addition, varnished-cambric insulation was not as susceptible to moisture as paper, and it could be bent at a shorter radius.

Varnished-cambric had these advantages over paper insulation, and even took the limelight from the old standby, rubber, in that the "split" type of insulation could be used. Part of the insulation could be put on each single conductor and part applied as an overall belt as in paper insulations. The resulting cable was much smaller in diameter than if rubber had been used. Also, the insulation would withstand a higher temperature than would rubber.

Until about 1909 yellow varnished cloth was used, the varnish having a linseed-oil base. At that time, H. W. Fisher of the Standard Underground Cable Company, developed an apparatus suitable for measuring dieletric losses, and tests were made on yellow varnished cloth in sheets. These tests showed that the linseed-oil varnish had very high dielectric loss characteristics. This discovery led to the development of the asphaltic-base black varnished cloth, which has a loss of only from one-half to one-third of that of the linseed-oil base varnished cloth.

Varnish Baked

This modern insulation consists of a cotton cloth which is run through a bath of varnish and baked in an oven. Two or three separate coats are applied, depending on the thickness of the finished material. Each coat of varnish is baked before the next coat is applied.

The cloth generally comes in widths of 36 to 40 inches, and after being varnished it is slit into the widths required for winding on the cable through use of automatic taping machines. Insulating compound is applied between alternate layers of tape.

Since 1931, efforts of engineers have often pointed toward raising resistance to high temperatures and corrosive atmospheres without sacrifice of dielectric strength, and substantial progress has been made. The field has been attractive to engi-

Standards Help Buyers Prepare Wire and Cable Specifications

The new standard specifications for varnished cloth insulation for lead-covered or braid-covered power cable is one of a group of standards for insulated wire and cable for general use. Taken together the entire series of standards gives industry nationally approved fundamental technical requirements for wires and cables. In preparing purchase specifications engineers will find it easy to refer to the appropriate American Standard for the wire and cable they are buying, but can specify individual preferences in make-up, special features, guarantees, payment for test samples, shipping details, and other commercial matters.

The standard for cloth insulation includes specifications for the materials used, including tensile strength, dielectric strength, and the effect of heat on the material; workmanship in preparing the cable and applying the insulation; properties of the insulation, which include thickness for various uses of cable; electrical properties; and test methods. Four tables show the recommended thicknesses of the insulation for different voltage, size, and type of cable.

Copies of the American Tentative Standard Specifications for Varnished Cloth Insulation for Lead-Covered or Braid-Covered Power Cable (C8.13-1937) are available from the American Standards Association at 40 cents each.

neers because a solution of the problem has meant an appreciable increase in the current rating of varnished-cloth insulated cables.

Steady improvement, from a crude beginning to a practical, satisfactory present construction, has marked the 40-year course of this type of cable.

Retailers Find Profits In Consumer Movement

Rumor had it until recently that the infant consumer's movement was like a toadstool which would poison any retailer who partook of it, said Ephraim Freedman, director of Macy's Bureau of Standards, speaking at the Annual Convention of the National Retail Dry Goods Association at New York, February 1. "It wasn't a toadstool, after all," he continued. "It was a great big delectable mushroom called Consumer Consciousness, growing so fast and spreading so rapidly that we retailers found we had a real problem although a very pleasant one to contend with."

The organization of the Advisory Committee on Ultimate Consumer Goods of the American Standards Association and of the Consumer-Retailer Relations Council was the result, he said, of a decision on the part of consumers and retailers to bring their problems to each other and to engage in a constructive effort to solve them.

Harold W. Brightman, executive vice-president, L. Bamberger & Company, Newark, chairman of the merchandising division, National Retail Dry Goods Association and of the Advisory Committee on Ultimate Consumer Goods of the American Standards Association, acted as chairman of the Consumer Relations Session of the convention.

Leading retailers described how their efforts to give consumers the information they want is resulting in more sales and more profits. "We were surprised," said Werner K. Gabler, Director of Research, Gimbel Brothers, Philadelphia, "to find immediate results . . . . in increased sales. We have figures of many individual items which show marked increases in sales and in many cases without special advertising—just through the label and the display. Customers are actually asking for merchandise with Gimbel Tested labels.

"Tested quality merchandise with complete factual information is one of the greatest contributions science has made to retail merchandising. Department stores in this country have been looking for new ideas to make their business more profitable and to increase their profit. Tested quality merchandise with consumer facts is the outstanding chance which they have to prove to the American public that they still have the leadership in retailing."

American Standards for Sale

A complete list of the American Standards for sale by the ASA is being mailed you with this issue of *Industrial Standardization*. Additional copies are available without charge.

Members of the American Standards Association are entitled to 20 per cent discount on all approved standards ordered through the ASA office. It will be a great saving to the Association if checks are enclosed with orders for standards and the 20 per cent deducted by Members.

Swedish Association Issues Standards for Cotton, Linen

Swedish standards just received by the American Standards Association give specifications, general manufacturing standards, and test methods for cotton and linen materials and cloth. These standards include:

Specifications for:
- cotton cloth SSK-32
- cotton twill SSK-33
- cotton sheeting SSK-34
- cotton twill for sheets SSK-35
- linen towels SSK-51, SSK-52, and SSK-53
- linen kitchen towel materials SSK-54
- linen towel materials SSK-55
- linen glass towels SSK-56
- linen towels for doctors SSK-57
- table linen SSK-58
- linen sheet material SSK-59
- linen mangle cloth SSK-60
- linen mattress material SSK-61
- linen sail cloth SSK-62
- linen packing cloth SSK-63
- linen sacking SSK-64

General manufacturing regulations for linen materials SSK-50

General manufacturing regulations for cotton materials SSK-31

General testing methods for cotton, linen and woolen materials SSK-30

Copies of these standards, published in Swedish, may be borrowed or ordered from the American Standards Association.

Why Not Use the American Standard for Steel Pipe?

by

Sabin Crocker[1]

Secretary, Sectional Committee on Wrought-Iron and Wrought-Steel Pipe

PIPE manufacturers and consumers are all being penalized by not promoting the use of the American Tenative Standard for Wrought-Iron and Wrought-Steel Pipe.[2] If pipe for all purposes including ordinary applications were ordered according to the schedules of pipe thicknesses outlined in this standard, the greater ease in design and specification and decreased material cost would benefit all interests.

This national standard, approved by the American Standards Association in 1935, was developed in order to:

1. Establish rational schedules of thickness based on ratios of pressure divided by stress;
2. Include thicknesses suitable for welding;
3. Provide suitable thicknesses in anticipation of development of new processes and materials for manufacturing and erecting piping;
4. Eliminate unnecessary duplication by reducing the large number of intermediate weights of pipe to a few commercially practicable schedules of thickness;
5. Codify the various materials specifications suitable for manufacturing pipe and arrange the formulation of additional specifications where required.

The primary purpose of this American Standard is to reduce the large number of odd weights of pipe to a few standard commercial schedules of thickness, and thus to simplify the stocking problem so that any of the schedule thicknesses can be secured from jobber's stocks. This aim has not yet been realized, however, due to the unwillingness of the piping trade to abandon the obsolete terminology of "standard weight" and "extra strong" as such, although most of these thicknesses actually are included in the new schedules.

The standard sets up rational schedules of thickness with reference to a constant ratio of fluid pressure to bursting stress throughout the entire size range. This makes it feasible to select from the same schedule, wall thicknesses for all pipe diameters for any one pressure service—main steam piping, for instance. This is a decided simplification from former practice. It was formerly necessary to select from several weights of pipe in order to obtain reasonably uniform working stresses throughout the range of diameters needed. Better conformity is assured between plant conditions and pipe wall thickness as contained in the schedule thicknesses of the new standard.

Lighter wall schedules than the old "standard weight" have been provided for economy in welded construction where the pipe is not weakened by threading. Rapidly increasing erection of pipe in the field by welding has enabled selection of thinner wall pipe than was formerly available in "standard weight." More of the lighter weight pipe would be called for now if it were available from jobber's stock. At the present time, it is impossible to secure these thicknesses from local jobbers with the result that Schedule 40 is often ordered when a lighter weight pipe would serve to better advantage.

Used for High-Pressure Piping

Selection of wall thicknesses in accordance with the standard has been confined largely to high-pressure, high-temperature piping in central stations where the schedules have been found particularly helpful in providing standard thicknesses in

[1]Detroit Edison Company.

[2]B36.10-1935, developed by a committee under the procedure of the American Standards Association, under the administrative supervision of the American Society of Mechanical Engineers and the American Society for Testing Materials.

alloy material. In an effort to avoid specifying a large number of different wall thicknesses to suit individual pressure-temperature conditions, the pipe manufacturers and the Prime Movers Committee of the Edison Electric Institute agreed to give preference to certain sizes and schedule thicknesses of the new American Standard in ordering and stocking carbon-molybdenum pipe for central stations.

The economic reasons for this standardization, namely, to facilitate delivery, particularly on replacement orders, and to avoid a costly mill set-up for producing a small quantity of pipe, will aid in the more widespread acceptance of this standard in the alloy field as the only means of avoiding a hopeless complexity of special wall thicknesses with attendant high production costs.

The oil industry has been reluctant about adopting the standard through fear that it would curtail the possibility of obtaining odd thickness of pipe on special order from the mill. This possibility is important, of course, where several miles of pipe are under consideration for a particular job, as is frequently the case for cross-country gas and oil lines. There was no intention, however, of urging too rigid compliance with the standard; manufacturers will, no doubt, continue to make a special rolling where it is economical to do so.

For small quantities of pipe, as in refineries, however, it would seem more profitable in the long run to accept a standard thickness slightly over the minimum computed value. The lower cost of production with the standard thickness schedules in effect will eventually be reflected in the lower cost to the consumer.

It is urged that all pipe producers endeavor through their sales literature and contacts to fix the concepts of the new standard with their customers as the basis of purchase. At the same time the trade associations representing consumer interests can well give the matter publicity through their literature. It will be only through an active effort to acquaint the piping trade more fully with the aims of the American Standard that it will be possible to extend its use to a point where real benefit will accrue.

Simplified Practice on Bolts Effective November 1

A simplified schedule of stock-production sizes for square-and hexagon-head machine bolts, square-neck carriage bolts, and lag bolts became effective as Simplified Practice Recommendation, R169-37, Machine, Carriage, and Lag Bolts, November 1, 1937.

The schedule consists of four tables giving the stock items most in demand and those least frequently used. It is based on a comprehensive study made by the Committee on Standards and Technical Practices of the American Institute of Bolt, Nut, and Rivet Manufacturers. This committee sent a questionnaire to the manufacturers to ascertain the variety in sizes of bolts produced, and to determine from analysis of the production and sales records the sizes most frequently used. It is estimated that the adoption of this simplified practice program will bring about a reduction from 896 to 584 sizes of bolts of the types covered, eliminating approximately 35 per cent. This reduction, it is believed, should create material savings through reduced costs of production and distribution. In addition, consumers will be assured of prompt shipment of orders, because they will know which sizes are readily available from stock.

The chairman of the standing committee, which prepared revisions to keep the recommendation up-to-date, is Harry C. Graham, chairman of the Committee on Standards and Technical Practices, American Institute of Bolt, Nut, and Rivet Manufacturers, Cleveland, Ohio.

Until printed copies of the recommendation are available, free mimeographed copies may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

ASA Member Plans Standards For Mass-Production Building

A method of design to permit standardized factory manufacture of building parts so that they will fit together in the field without cutting and yet give flexibility of layout and design is being worked out by one of the new Company Members of the American Standards Association—the Bemis Industries, Inc.

The Bemis Industries has developed what it calls the Cubical Modular Method of design, which prescribes certain relationships of dimensions, joints, and jointing throughout the structure. This permits all parts to be made in a reasonably limited range of standard sizes and gives flexibility of layout with the high degree of standardization required for mass-production methods, according to the Bemis company.

What the National Pajama Guild Is Doing for Standard Sizes

Standards for A, B, C, and D sizes is first step in pajama industry's standardization program

by

F. B. Shipley

Secretary, National Pajama Guild, Inc.

IF YOU are an average man, size B pajamas should fit you. Not like the "paper on the wall," but loosely, comfortably, and with sufficient slack at the right places to accomodate the twists and turns of restless sleep. If you buy them from a good shop, supplied by a reputable manufacturer, that probably is what you will get. You will not know until you have slept in them, for the pajamas will come to you across the counter folded and pinned in so many places that pre-judgment is impossible.

But, and here's the rub, if you buy them from a dealer specializing in "cut prices," you may call for and receive garments marked with the same "size B," looking for all the world the same, yet live to rue the day. This same "size B" may not fit you at all. The chest too narrow; the trousers too tight or too short; the arm-holes bind; or most probable of all, the knees and elbows forestall any but streamlined slumber. Nor is this all, for these under-cut pajamas will not serve you so long, even if you are willing or forced to put up with discomfort. Because the strains incident to tightness play havoc with seams and buttons, and even with the fabric itself. The same will apply to any man coming into any of the four size categories in which men's pajamas traditionally are classed—A, B, C, or D.

No Accepted Standard

Why? Because there is no universally accepted standard of dimensions covering the fifteen basic measurements entering into each suit of pajamas. Manufacturers are free to do as they like. It is true that there is a general, but loosely construed, trade recognition that a given size-designation shall broadly denote suitability to a given type of wearer. But this recognition is so vague and elastic that it is no safeguard to the consumer. And, most important of all, it is not enforceable. A conscientious maker's size B contains four square yards of cloth, but there is nothing to prevent another maker, seeking to undersell, from stamping the same "size B" upon garments containing only three yards. Indeed, if he pleases, he may stamp "size B" upon pajamas tiny enough for the late Tom Thumb, and there is no law to stop him. Nothing but the common decency of manufacturers and retail merchants intervenes to protect the public from swindle.

And swindling there is; not so common as one might think, but enough to create a sizeable amount of disturbance in the industry and much public exasperation.

The need for standardization of sizes of men's pajamas is as obvious as the need for a standard yardstick. The best manufacturers and the best retailers want it. The public should have it. Why has it not been established? What has been done about it? What is proposed to be done? First, the lethargy of many good manufacturers is not so reprehensible as would seem. Because in the not distant past, the country's pajama needs were supplied by a handful of manufacturers of established standing. Their goods were right and no one had cause for complaint. Only within

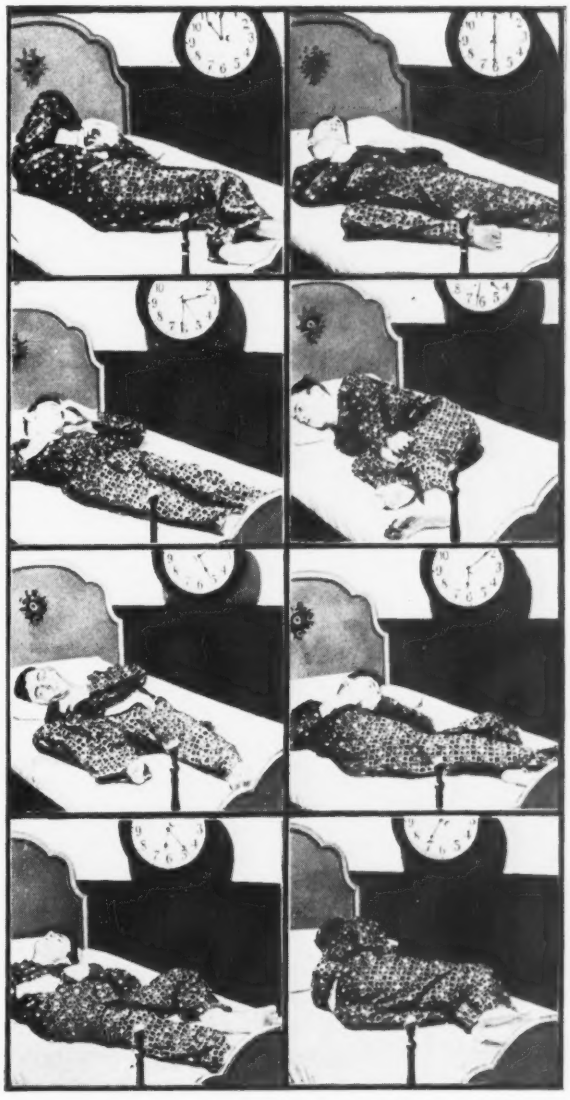
twenty years has the chiseler come into the picture. His advent as an important, precedent-wrecking factor was coincident with the crash of 1929. Then conditions played into his hand. Quality trade suffered a sharp set-back. Price was the only inducement, and the easiest way to cut prices was to cut dimensions. A foot was no longer twelve inches, but eleven or even nine. The public didn't know, and the chiseler came into his own. Even some solid manufacturers, to keep their factories going, were forced into the business of "sale goods," and there was an orgy of "cheap" pajamas from coast to coast.

Manufacturers See Dangers

Then the responsible manufacturers awakened to the danger, not to their own business alone, but to the industry from public dissatisfaction. A movement was started and, under the guidance of I. J. Fairchild, Chief of the Division of Trade Standards, National Bureau of Standards there assembled in Washington representatives of ten groups of national scope, including the American Home Economics Association, National Retail Dry Goods Association, the Associated Dry Goods Corporation, the General Federation of Women's Clubs, the National Association of Retail Clothiers and Furnishers, and four Federal Departments. This conference ended in agreement upon minimum dimensions for the four sizes of men's pajamas known as A, B, C, and D, and these were approved and promulgated by the Department of Commerce as Commercial Standard 15-29, effective from January 30, 1930. But still these standards were unenforceable.

Then followed the organization of the National Pajama Manufacturers Council to bring the industry into line. A *sine qua non* of membership was a firm agreement not to make or deal in pajamas not conforming to the Government standard. Only a relatively small number of manufacturers signed up, but those few represented the majority production. The movement progressed slowly, partly because the industry was in the throes of the depression. Some headway was made. The retail trade was informed and heartily approved. No price restrictions were involved, but the standards gave some protection against unfair competition. Consumers were being educated. Tags were affixed to pajamas certifying that they complied with the official standards. Retailers began to insist upon this certification, and the good of the plan was slowly but surely becoming apparent.

Then suddenly came the NRA. Space prevents the story of the long fight in Washington before this new and dominating agency of government.



Courtesy Simmons Company

How We Sleep

The average person twists or turns 20 to 45 times during a night

In the end, the Code Administration compelled the Council to abandon its requirement for adhesion to the standards. The reasons are another story, but the whole movement to establish standards of sizes for men's pajamas collapsed overnight.

More recently, the founders of the movement have gotten together to resuscitate the original plan. They have changed the corporate name to

a more appropriate one; re-written the by-laws that were dictated by NRA, agreed to conform to the standards sponsored by the National Bureau of Standards, given to the organization itself a larger measure of independence of the wishes of individual members, and set up machinery for the policing of the industry and the protection of the public from misrepresentation. In addition, measures of standardization and public protection are envisaged far beyond those of size alone. For the present, the emphasis is on size alone, because that embraces the commonest form of trade chicanery. The others will follow as fast as their feasibility may be determined and agreed upon. No price restrictions will enter. The trade may sell and the public buy for what it pleases. The effort will be, as it were, to make the pajama yard stick an honest thirty-six inches.

For the present, there is no power of enforcement but public opinion and trade interest. But State laws defining sizes are being thought of. The time may not be far distant when the certificate of the National Pajama Guild will be sufficient guarantee to the consumer that he will get what he expects to get, whether he pays two dollars or twenty.

Pajama Guild Recommends Change in Size Standards

Proposals for two changes in the Commercial Standard for pajamas were approved by the National Pajama Guild recently for action by the standing committee of the industry under the procedure of the National Bureau of Standards. An increase in the sleeve length of size B from 32 to 33 inches and a one-inch increase in all trouser bottom widths were proposed. This would increase size A trouser bottoms from 17 to 18 inches; size B, from 17½ to 18½ inches; size C, from 18½ to 19½ inches; and size D, from 20 to 21 inches.

The Guild also considered plans for a campaign to support the revised standards after their promulgation by the National Bureau of Standards.

British Standard Changes Method For Brinell Hardness Testing

A new edition of the British Standard method and tables for Brinell hardness testing has just been issued by the British Standards Institution. The tables of hardness numbers, derived from the accepted formula for Brinell hardness numbers, are unchanged. The changes in the new edition are in the method of carrying out the tests. For example, the thickness of the test specimen for general testing has been standardized at ten times the depth of the impression in place of the former standard of seven times. A schedule of minimum thickness of test specimens calculated in accordance with this requirement for a selected series of ball diameters, loads, and hardness numbers is given.

The new edition also indicates the manner of selecting an appropriate ratio, as guidance for those preparing specifications for materials, where it is necessary to indicate the appropriate ratio.

The standard, B.S.S. 240-1937, may be ordered through the American Standards Association.

Hospital Standards Issued By Australian Association

Two standards for use by hospitals, giving specifications for two-piece obstetrical beds and for surgical dressings, were recently issued by the Standards Association of Australia.

Instructions are given for general construction and dimensions of hospital beds, as well as for details, such as tubing, head-end, foot-end, and mattress frames.

Bandages, gauzes, lints, and plasters are some of the surgical dressings for which specifications are given. Methods of chemical testing are included.

Copies of the standards may be ordered through the American Standards Association.

Index Lists A.S.T.M. Standards

The American Society for Testing Materials has just issued its Index to A. S. T. M. Standards and Tentative Standards, listing the 823 standards available January 1, 1938. The standards are listed both under appropriate key-words according to the subjects they cover, and also in numeric sequence according to their serial designations.

Copies are available without charge from the American Society for Testing Materials, 260 S. Broad Street, Philadelphia.

Wheel Makers' Association Bases Standard Practice on Research

Development and standardization of improved manufacturing methods as the result of research carried on by the Association of Manufacturers of Chilled Car Wheels are largely responsible for the present high standard of reliability and performance of chilled iron car wheels, comments *Railway Age* in its December 4, 1937, issue.

During the past year the research department of the Association assembled data regarding all of the best known methods of melting iron in a cupola, especially as it relates to the car-wheel foundry. The Association then published these data, together with original research information worked out by the department, in a pamphlet for the use of its members. The pamphlet gives recommendations on the operation of cupolas of all common sizes for the manufacture of chilled car wheels.

A new department for inspecting and testing wheels at all member plants was set up by the association during the past year. This department has already accomplished a great deal in promoting the use of the most improved methods of testing and inspecting at all of the wheel foundries, according to the article.

"This has brought out the advantage of standardization of methods and instruments for measuring temperatures at all points in the manufacturing process," says *Railway Age*. "To make this possible, a modern pyrometry laboratory has been set up in the Research Department at Chicago for the calibration and repair of pyrometers and thermo-couples used at the various wheel foundries.

"Doubtless the most important single improvement to date in the heat treatment of chilled car wheels has been accomplished in the past two years by the development of the low-heat-capacity pit in which the hot wheels are placed after they are shaken out of the mold at the foundry. The result obtained is a practically complete relief of internal stresses in the wheel as well as a modification and improvement in the grain structure. Wheels of this type are much more capable of withstanding the high thermal stresses that are occasionally developed when defective brake mechanisms cause the brake shoes to stick or drag on the wheels in service. It also results in increased resistance of flange and rim to impact blows.

"Information developed through the research work of the Association of Manufacturers of Chilled Car Wheels is furnished to the member wheel foundry organizations by means of bulletins, plant visits, and technical meetings."

A.S.T.M. Symposium Gives Data On Tests of Protective Coatings

Latest information on the correlation of accelerated laboratory tests and service tests on protective and decorative coatings is given in a Symposium just published by the American Society for Testing Materials. The Symposium consists of brief statements by 25 technical authorities who have had experience in the use of accelerated laboratory tests. It is divided into three sections, Finishes for Indoor Service; Paints for Exterior Service on Wood; and Paints for Iron and Steel. It covers in condensed form a great deal of the work done since the first scientific attempt many years ago, and evaluates many of the wide variety of accelerated tests that have been used.

Much of the discussion which took place at the Annual Meeting of the American Society for Testing Materials in June, 1937, when the Symposium was presented, is included in the publication.

Copies in heavy paper cover are available from the A. S. T. M., 260 South Broad Street, Philadelphia, at 60 cents each.

Insurance Executives Name Harvey to Head Safety Section

Julien H. Harvey, formerly executive vice-president of the Greater New York Safety Council, has been appointed managing director of the National Conservation Bureau by the Association of Casualty and Surety Executives.

The Bureau is maintained by the stock casualty insurance companies for the purpose of developing and carrying forward accident prevention and educational programs not only by direct action, but also in cooperation with other national organizations. The National Conservation Bureau serves as the representative of stock casualty insurance companies in the work of the ASA.

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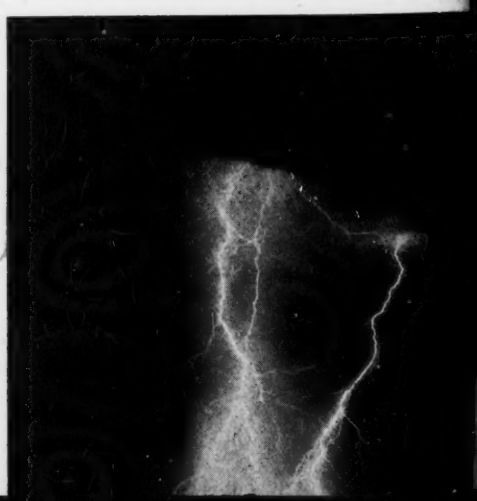

Members of the American Standards Association are entitled to a discount of 20% when ordering standards through the ASA office.